

Serial No. 09/914,807

Attorney Docket No. 10543-028

**Listing of Claims:**

Claims 1-18 (cancelled).

19. (Previously Presented): A method for controlling a vehicle having a traction-slip control system (TCS) monitoring the behavior of the vehicle wheels, comprising the steps of:

detecting a diagonal axle twist condition in which two diagonally opposite wheels lose sufficient traction with the ground;

evaluating the diagonal axle twist as a regulating variable of the traction slip control system; and

providing torque to at least one vehicle wheel having sufficient traction with the ground.

20. (Previously Presented): The method according to Claim 19 wherein the torque providing step includes:

effecting at least a partial lock of a differential within the vehicle, upon detection of a diagonal axle twist.

21. (Previously Presented): The method according to Claim 20 wherein the effecting step at least partially locks at least one of a center differential, a front differential and a rear differential.

22. (Previously Presented): The method according to Claim 20 wherein the effecting step at least partially locks a differential by way of the traction control system.

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23. (Previously Presented): The method according to Claim 20 wherein the effecting step at least partially locks a differential by way of a differential lock.

24. (Currently Amended): The method according to Claim 19 wherein the torque providing step includes:

setting a medium brake pressure level at wheel brakes of controlled wheels with minimum traction slip upon detection of diagonal axle twist, the medium brake pressure corresponding to required traction; and maintaining the medium brake pressure level for a period of time.

25. (Previously Presented): The method according to Claim 19 further comprising the step of:

reducing a control threshold of the traction slip control system upon detection of a diagonal axle twist.

26. (Previously Presented): The method according to Claim 19 wherein said evaluating step is performed only when vehicle speed falls below a specified vehicle speed limit value.

27. (Previously Presented): The method according to Claim 26 wherein said speed limit value is within the range of 3 to 15 kilometers per hour.

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28. (Currently Amended): A method for detecting a diagonal axle twist of a motor vehicle, said motor vehicle having an all-wheel drive system, a vehicle control system and a traction control system, comprising the steps of:

comparing a characteristic of each of the individual, driven wheels, to the other driven wheels, ~~including the characteristics of at least two diagonally opposite wheels~~, the characteristic being at least one of wheel slip, rotating behavior and changes in rotating behavior; and

determining when two diagonally opposite wheels have lost sufficient traction with the ground based on the comparison of the characteristic.

29. (Previously Presented): The method according to Claim 28 wherein the rotating behavior includes the traction slip of the individual wheels, and further comprising the step of determining whether the traction slip is greater than a specified limit value.

30. (Previously Presented): The method according to Claim 28 wherein the characteristics of at least two transversally opposite wheels are compared.

31. (Cancel)

32. (Currently Amended): The method according to Claim 28 29 further comprising the step of:

determining the diagonal axle twist when certain traction-slip conditions are satisfied for a period of time.

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33. (Previously Presented): The method according to Claim 32 wherein the traction-slip conditions include the traction slip being greater than a specified limit value on only one wheel of a secondary axle.

34. (Previously Presented): The method according to Claim 32 wherein the traction-slip conditions include the traction slip being greater than a specified limit value on both of two diagonally opposite wheels.

35. (Previously Presented): The method according to Claim 32 wherein the traction-slip conditions include the traction slip being less than a specified limit value on a first wheel of a primary axle, the first wheel lying opposite a second wheel on said first axle, such second wheel having greater than the traction-slip specified limit value.

36. (Previously Presented): The method according to Claim 32 wherein the period of time is 0.3 to 1.5 seconds.

37. (Currently Amended): The method according to Claim 32 wherein the period of time is 50 to 200 msec. when a diagonal axle twist was previously determined with within the prior 15 seconds.

38. (Previously Presented): The method according to Claim 33 wherein the specified limit value is within the range of 10 kilometers per hour to 40 kilometers per hour.

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39. (Previously Presented): The method according to Claim 33 wherein the specified limit value is considered to have been exceeded when a control procedure of the traction control system is activated at a wheel.

40. (Previously Presented): A circuit arrangement for detecting a diagonal axle twist of a motor vehicle, said motor vehicle having an all-wheel drive system and a traction-slip control system, the arrangement comprising:

a first detection circuit for detecting measured changes in the rotating behavior of a set of driven wheels, the first detection circuit including a first evaluation circuit evaluating the slip of the wheels on a secondary axle;

a second and a third evaluation circuit evaluating the slip of two diagonally opposite wheels for detecting a diagonal axle twist on two diagonally opposite wheels;

a fourth evaluation circuit evaluating the slip of the wheels on a primary axle; an integrator; and  
a signal generator.

41. (Cancelled)

42. (Previously Presented): The circuit according to Claim 40 further comprising a second detection circuit capable of detecting the vehicle reference speed on the basis of measured values; a comparator on said first detection circuit where the comparator is capable of comparing the vehicle reference speed with a specified limit value; and a signal generated by the first detection circuit when the vehicle reference speed falls below the specified value.